

## Assignment – 4

**Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms send “alert” to ibm cloud and display in device recent events**

Date	22 October 2022
Team ID	PNT2022TMID38486
Project Name	IOT-based smart crop protection system for agriculture
Maximum Marks	4 Marks

### PROGRAM :

```
// ARDUINO PINS (TRIGGER PIN, ECHO
PIN) const int TRIG_PIN = 7; const int
ECHO_PIN = 8;

// Anything over 400 cm (23200 us pulse) is "out of range"
const unsigned int max_dist = 23200;
void setup()
{

    // The Trigger pin will tell the sensor to range find
    pinMode(TRIG_PIN, OUTPUT);
    digitalWrite(TRIG_PIN, LOW);
    //Set Echo pin as input to measure the time duration of pulse returning back from the distance sensor
    pinMode(ECHO_PIN, INPUT);
```

```

// We'll use the serial monitor to view the sensor output
Serial.begin(9600);

}

void loop() {

    unsigned long t1; unsigned
    long t2; unsigned long
    pulse_width; float cm;
    float inches;
    // Hold the trigger pin high for at least 10 us
    digitalWrite(TRIG_PIN, HIGH);
    delayMicroseconds(10);
    digitalWrite(TRIG_PIN, LOW);
    // Wait for pulse on echo pin
    while ( digitalRead(ECHO_PIN) == 0 );
    // Measure how long the echo pin was held high (pulse
    width) // Note: the micros() counter will overflow after
    ~70 min t1 = micros(); while ( digitalRead(ECHO_PIN) == 1);
    t2 = micros();
    pulse_width = t2 - t1;
    // Calculate distance in centimeters and inches. The constants //
    are found in the datasheet, and calculated from the assumed speed
    //of sound in air at sea level (~340 m/s).
    cm = pulse_width / 58.0;
    inches = pulse_width / 148.0;
    // Print out results

    if ( pulse_width > max_dist ) {
        Serial.println("Out of range");
    } else {
        Serial.println("*****");
        Serial.print("Distance Measured in cm : ");
    }
}

```

```
    Serial.println(cm);
if(cm<100){
    // while(true){
    Serial.println("Alert !!");
    // }
}

Serial.print("*****");

// Wait at least 1000ms before next measurement delay(1000);
}
```

**OUTPUT :**



sketch.ino ●

diagram.json ●

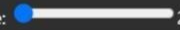
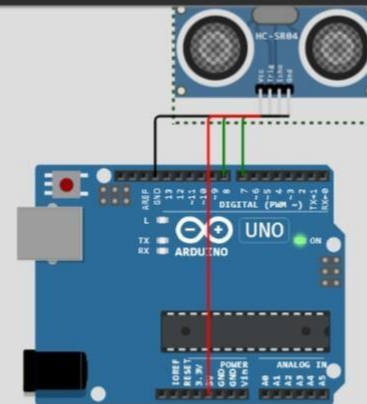
Library Manager ▾

```
1
2
3
4
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7 const int ECHO_PIN = 8;
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10 const unsigned int max_dist = 23200;
11
12 void setup() {
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14     // The Trigger pin will tell the sensor to range find
15     pinMode(TRIG_PIN, OUTPUT);
16     digitalWrite(TRIG_PIN, LOW);
17
18     //Set Echo pin as input to measure the time duration of pulse returning back from the d
19     pinMode(ECHO_PIN, INPUT);
20
21     // We'll use the serial monitor to view the sensor output
22     Serial.begin(9600);
23 }
24
25 void loop() {
26
27     unsigned long t1;
28     unsigned long t2;
29     unsigned long pulse_width;
30     float cm;
31     float inches;
32
33     // Hold the trigger pin high for at least 10 us
34     digitalWrite(TRIG_PIN, HIGH);
```

Simulation

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Editing Ultrasonic Distance Sensor

Distance:  2cm\*\*\*\*\*  
Distance Measured in cm : 2.07

Alert !!

\*\*\*\*\*

Distance Measured in cm : 2.00

Alert !!

\*\*\*\*\*



WOKWI

SAVE

SHARE

DocsSIGN IN

sketch.ino • diagram.json • Library Manager

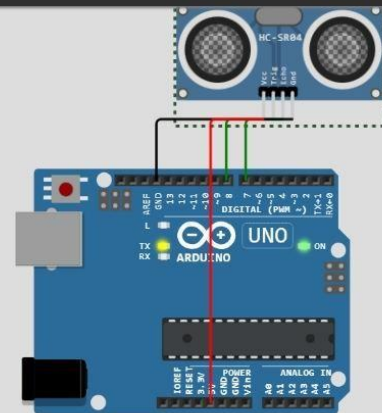
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29     unsigned long pulse_width;
30     float cm;
31     float inches;
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33     // Hold the trigger pin high for at least 10 us
34     digitalWrite(TRIG_PIN, HIGH);
```

Simulation




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Editing Ultrasonic Distance Sensor

Distance: 268cm



Distance Measured in cm : 271.79  
\*\*\*\*\*  
Distance Measured in cm : 271.72  
\*\*\*\*\*  
Distance Measured in cm : 271.72  
\*\*\*\*\*  
Distance Measured in cm : 271.79



Project Link : <https://wokwi.com/projects/346290927428436563>